

**PERFORMANCE COMPARISON OF PARALLEL BEES ALGORITHM  
ON ROSENBROCK FUNCTION**

**A project submitted to Dean of Awang Had Salleh Graduate**

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**In Partial Fulfillment of the requirements the degree of**

**Master of Science (Information Technology)**

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**By**

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# **ABSTRACT**

The optimization algorithms that imitate nature have acquired much attention principally mechanisms for solving the difficult issues for example the travelling salesman problem (TSP) which is containing routing and scheduling of the tasks. This thesis presents the parallel Bees Algorithm as a new approach for optimizing the last results for the Bees Algorithm.

Bees Algorithm is one of the optimization algorithms inspired from the natural foraging ways of the honey bees of finding the best solution. It is a series of activities based on the searching algorithm in order to access the best solutions. It is an iteration algorithm; therefore, it is suffering from slow convergence. The other downside of the Bee Algorithm is that it has needless computation. This means that it spends a long time for the bees algorithm converge the optimum solution. In this study, the parallel bees algorithm technique is proposed for overcoming of this issue. Due to that, this would lead to reduce the required time to get a solution with faster results accuracy than original Bees Algorithm.

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# LIST OF ABBREVIATIONS

ABC	Artificial Bee Colony
AI	Artificial Immune algorithm
BA	Bees Algorithm
GA	Genetic Algorithm
IWO	Invasive Weed Optimization algorithm
MPICH2	Message Passing Interface Chameleon version 2
MPI	Message Passing Interface
MSM	Master – Slave Model
PSO	Particle Swarm Optimization
QAP	Quadratic Assignment Problem
SI	Swarm Intelligence
TSP	Traveling Salesman Problem

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# **CHAPTER ONE**

## **INTRODUCTION**

In this chapter, Bees Algorithm (BA) is studied in order to improve its speed performance. This chapter is divided into a few sections. The chapter starts by introducing the original Bees Algorithm and continues with its speed performance problem which specifies the research problem that aims to tackle. In this chapter also discuss, the main objective and contribution of the proposed work. In last section, draws the summary of the study.

### **1.1 Background**

Bees algorithm is one of the enhancement methods, which is inspired by the nature of the food bees foraging activities. This algorithm has been successfully applied in some optimization problems, especially in the function optimization and parameters optimization (Mahmuddin & Yusof, 2009).

The bees algorithm optimisation that was suggested by Pham et.al in 2005 aims to optimise the numerical problems. It is inspired from the food foraging behavior for the swarm of honey bees. The honey bees have many ways such as waggle dance to determine the best

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